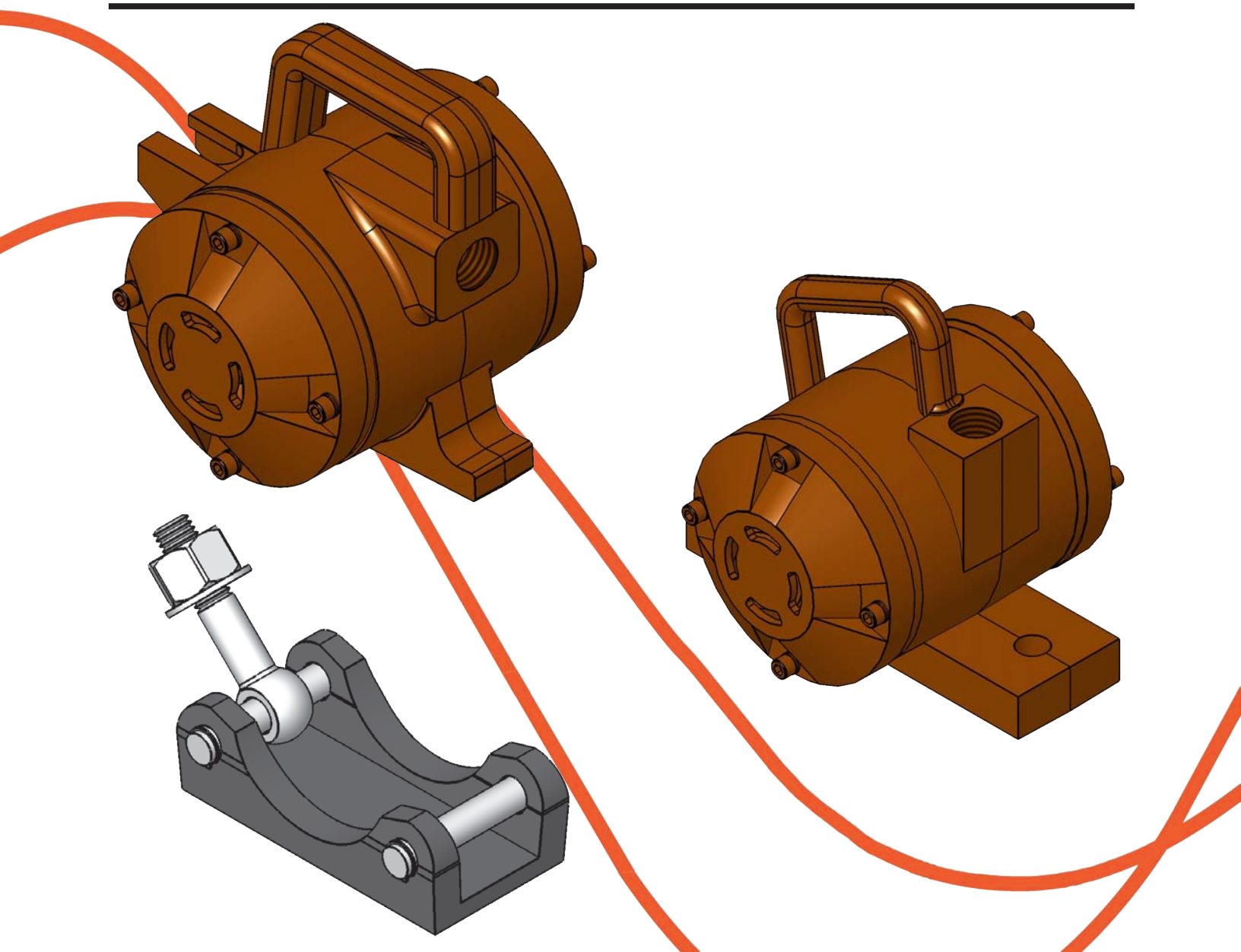
CC Series Heavy Duty Pneumatic Turbine

Mounting Instructions • Operating Instructions • Technical Data
Parts List • Maintenance • Troubleshooting



VIBCO® SILENT
We're The Vibrator Guys.™

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Thank you for choosing VIBCO, Inc. for your vibration needs. You are now the owner of the finest silent pneumatic vibrator available today backed by complete manufacturer confidence in its quality and dependability. For reference please complete the information below about your new VIBCO vibrator.

Model Number: _____

Date of Purchase:_____

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CAUTION

These mounting instructions MUST be followed! Use of another manufacturers procedures may void warranty!

SAFETY INSTRUCTIONS

WARNING: Failure to read and follow these installation instructions and safety precautions could result in personal injury, equipment damage, shortened service life or unsatisfactory equipment performance. All information in this document is vital to the proper installation and operation of the equipment. It is important that all personnel who will be coming in contact with this product thoroughly read and understand this manual.

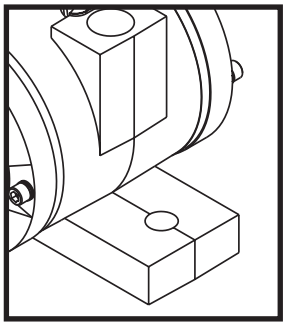
HOW IT WORKS

VIBCO turbine air vibrators are designed to keep noise pollution at a minimum. Compressed air turns a specially designed turbine wheel, allowing the air to be channeled through the unit, then exhausting through muffler pads, making them virtually noiseless. Theses units require no lubrication and its oversized bearings give it years of trouble-free service.

General Features

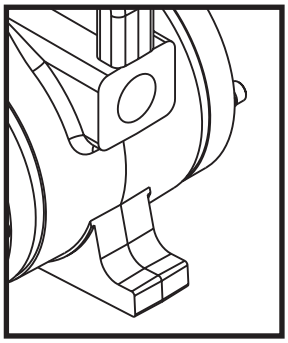
CCF models are the quiet solution for large bins, hoppers and chutes. Ideal for packing tables and screen applications. The lightweight and high force output, CCF-2000 and CCF-5000, replace noisy 3 in. and 4 in. piston vibrators. The CCF 7000 is ideal for precast and prestressed concrete and replaces loud roller vibrators.

The portable CCL-2000 uses the LC-2 lug bracket. Its light weight makes it ideal for all small concrete precast forms. Model CCL-5000 is ideal for tables, casting concrete panels, window frames or replacing large piston vibrators on large bins.



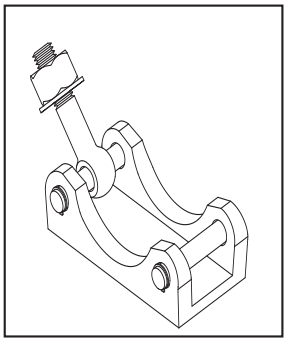
CCF

PERMANENT
FOOT MOUNTED
TWO HOLE MOUNT



CCL

REMOVABLE
LUG TYPE
BRACKET MOUNT



Lug Bracket

(PORTABLE INCONJUNCTION)

MOUNTING INSTRUCTIONS CHECKLIST

The warranty is void if vibrator is not properly installed. During installation follow and check off the following steps and your vibrator should provide you with years of trouble-free service.

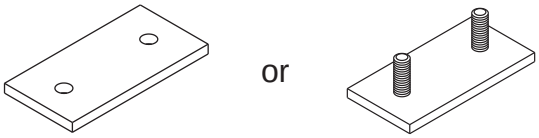
- ☐ Determine style of mounting plate.
- ☐ Determine length of channel iron.
- ☐ Select method of mounting channel iron.
- ☐ ***STITCH*** weld mounting plate to channel iron.
- ☐ Determine vibrator placement on bin.
- ☐ ***STITCH*** weld channel iron to bin.
- ☐ Place vibrator on mounting plate.
- ☐ Check the mounting plate for warping. Secure firmly.
- ☐ Install safety chain or cable.
- ☐ Connect pneumatics.
- ☐ ***FILL OUT WARRANTY CARD!!!!***

NOTES ABOUT INSTALLATION

If you have any questions consult the Mounting Instructions section of this manual or call VIBCO Technical Support at (800) 633-0032.

Force (lbs)	Bin Thickness	Channel Iron	Length
100	1/4 to 3/16 in.	3 in.	3 to 4 in. longer than vibrator
100-500	3/8 in.	4 in.	6 to 8 in. longer than vibrator
500+	1/2 in.	4 in.	8 to 12 longer than vibrator
500	1/4 to 3/16 in.	4 in.	1-1/2 to 3 ft. longer than vibrator
500	3/16 to 3/8 in.	4 in.	1 to 2 ft. longer than vibrator
500+	1/2 to 5/8 in.	4 in.	8 to 12 in. longer than vibrator

Mounting Plate
Use 1/4 in. thick mounting plate.

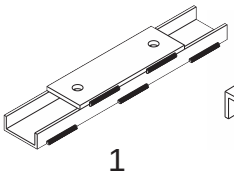


Thru Hole Studded

Mounting Channel
Never place the vibrator directly onto the skin of the bin. It should be mounted to either a mounting plate or a piece of channel iron that has been **stitch welded** to the bin. The proper mounting method is to use 2 in. X 1 in. X 1/8 in. thick channel iron. This will help to stiffen the structure to be vibrated as well as spread the vibration over a larger surface, increasing the overall efficiency and diminishing the possibilities of fatigue cracks in the bin material. The channel iron should reach within 6 to 12 in. from top and bottom of the sloped section of the bin and should never be shorter than 6 in. longer than the vibrator mounting foot.

Different Suggestions for Mounting the Channel
1) Mounting plate welded to legs of channel iron (see pictures below).
2) 2 in. channel with holes drilled thru and nuts welded on back , or just holes drilled thru.
3) Mounting channel with mounting plate and holes drilled or tapped thru.
4) Notch the channel for access to mounting bolts.
5) Weld studs to back of channel.

Stitch weld channel: weld 2 to 3 inches, skip 1 to 2 inches and repeat until securely mounted. Always stop welds 1 in. from ends to prevent heat concentration and bin cracking.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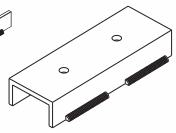
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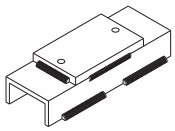
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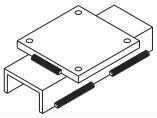
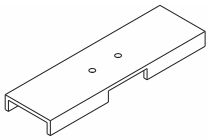
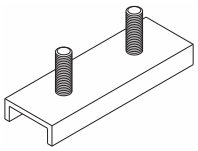
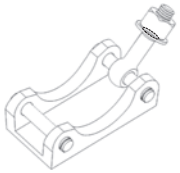
3b 

4 

5 

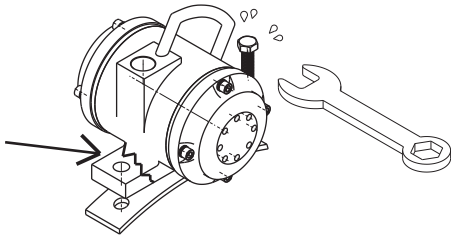
6 

NOTE: for a list of alternate mounting brackets, see pages 35 & 36 of the VIBCO General Catalog.

Welding Mounting Plate to Channel Iron

Stitch weld the mounting plate to the channel iron. If the bin plate is 3/16 in. or less, weld the mounting plate to the back of the channel iron (see Figure 3 or 4). If the bin plate is over 3/16 in. weld the mounting plate to the legs of the channel iron (see Figure 1). Drill and tap holes or use studded plate (see Figure 1 or 5). Make sure the mounting plate does not warp or distort. If this occurs, straighten it, replace it or shim vibrator.

Note: No matter what thickness of plate used, plate can still warp due to welding heat if not welded per VIBCO instructions (see example to right)



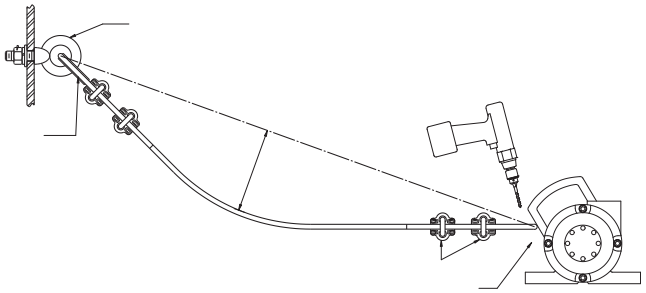
Placement

For coarse materials the vibrator should be mounted approximately 1/3 of the distance from the discharge opening to the top of the sloped portion of the bin. For fine materials place the vibrator approximately 1/4 of the same distance (see different mounting suggestions on the following pages).

Note: For live bottom bins, mounting placement procedure is different. Please call VIBCO factory to speak with an application engineer.

Welding Channel Iron to Bin

Where possible, the mounting plate or the channel iron should be placed 1/3 of the distance from the discharge opening to the top of the sloped portion of the bin, for fine grain materials place 1/4 of the same distance. Tack weld channel iron in place, then weld intermittent welds 3 in. to 6 in. long with 3 in. between them along the entire length of the channel. Stop weld a minimum of 1 in. from the ends. It is important that you do not weld the ends of the channel iron. The heat concentration when welding the ends could cause premature fatigue cracks.

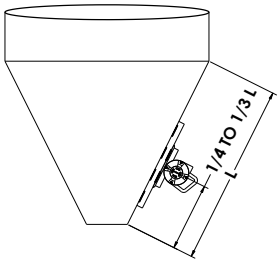


Installing Safety Chain or Cable

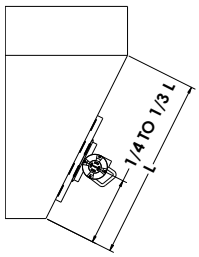
It is important to install a safety chain or wire to prevent the vibrator from falling and causing injury if it comes loose from its mount. Attach chain to stationary object, not to mounting plate or channel iron.

MOUNTING SUGGESTIONS

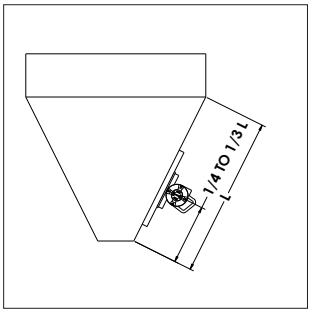
Conical Bin



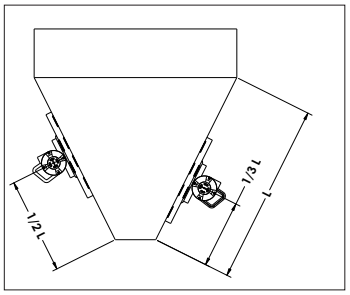
1/2 Rectangular Bin



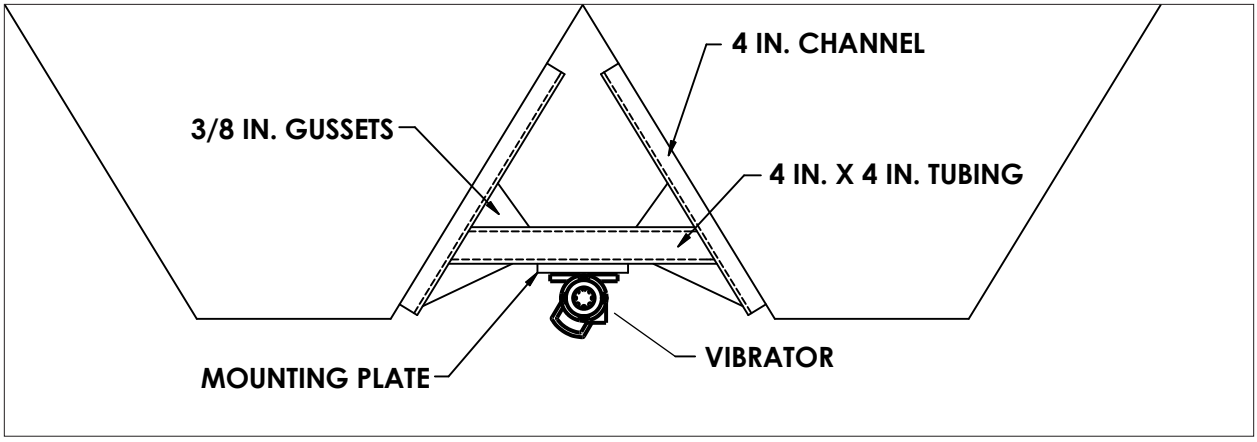
Rectangular Bin



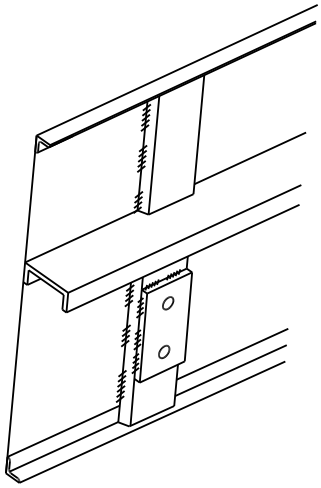
Two Vibrators On A Single Bin



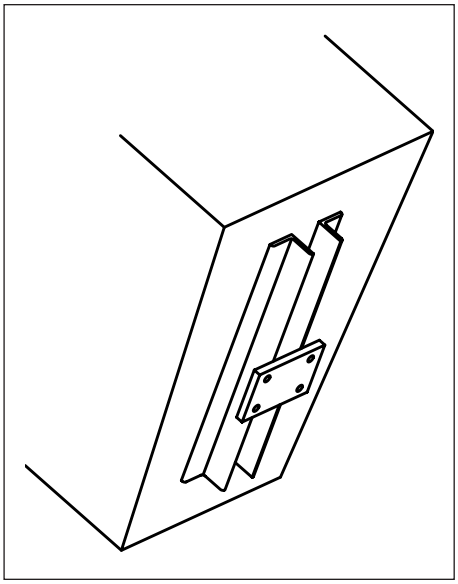
One Vibrator For A Double Bin



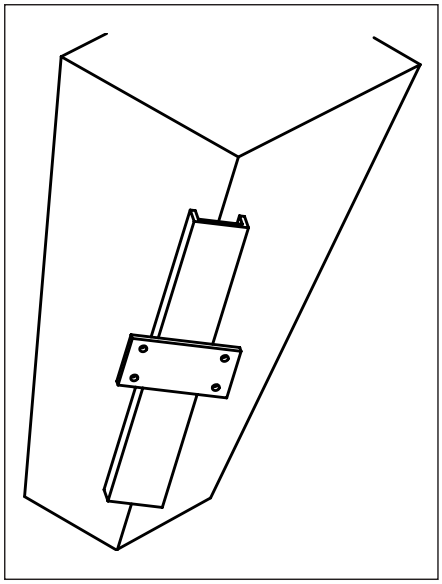
Bin With Stiffeners



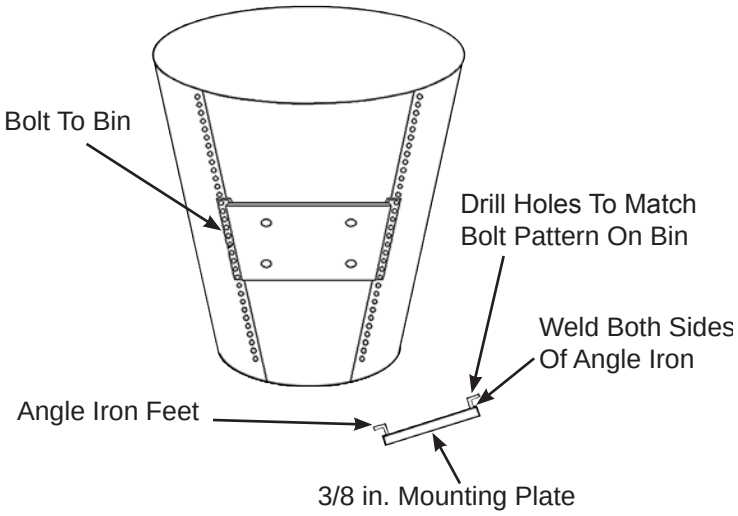
Angle Iron Stiffeners Instead of Channel Iron



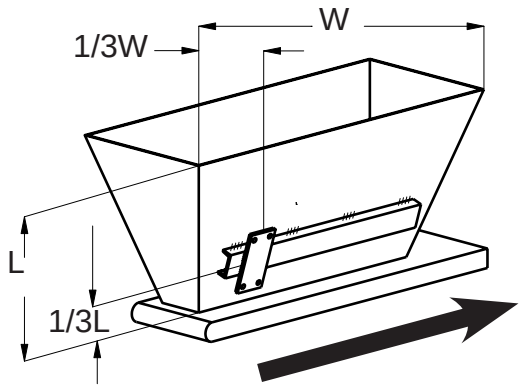
Thin Skinned Bin Corner Mount



Sheet Metal Bin



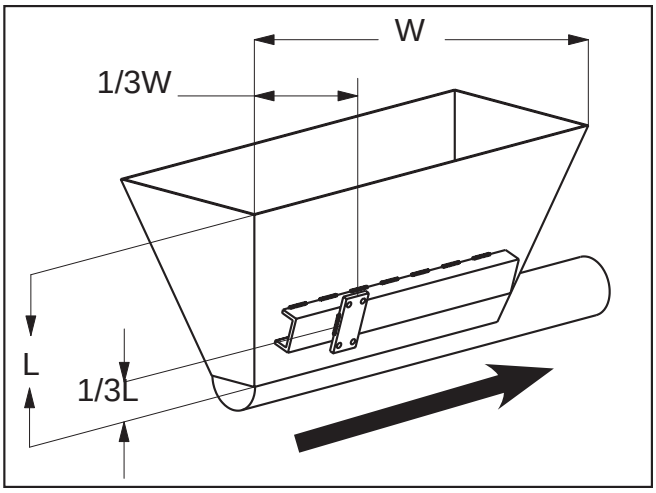
Belt Conveyors

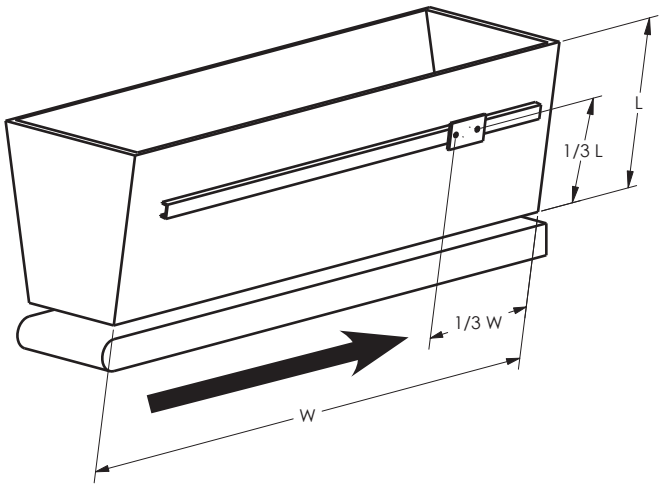


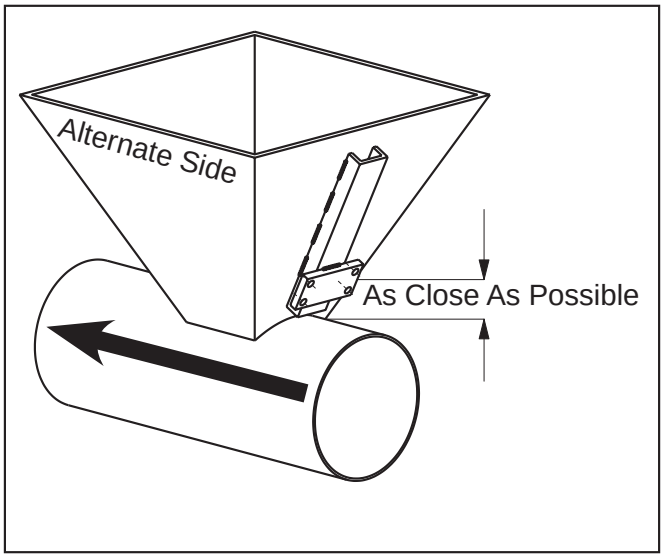
Belt Conveyors

Belt conveyor feeds from the front. Vibrator should be placed 1/3 from the front. If 2 vibrators are used, place 2nd one directly opposite 1/3 from the back. Do not operate back vibrator until bin is empty in front and the front vibrator has turned off. For more details consult Vibco.

Long Bin





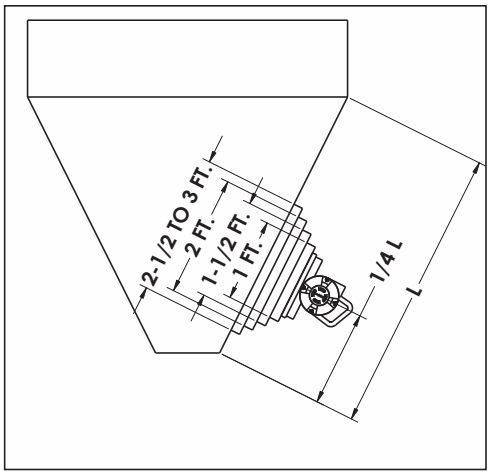


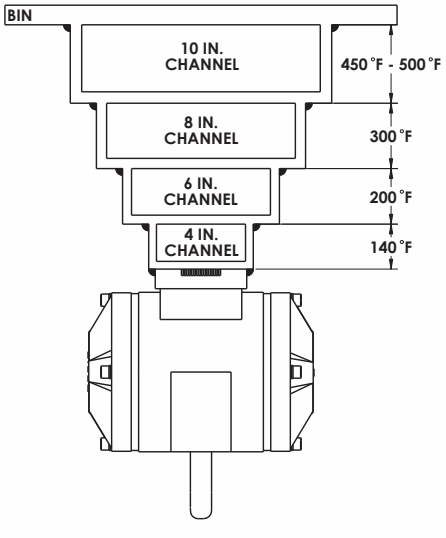
Screw Conveyors

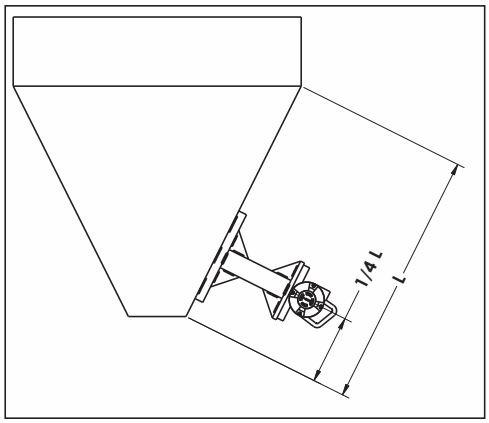
Feeds from back. Vibrator should be placed 1/3 from the back. If 2 vibrators are used, place 2nd one directly opposite 1/3 from the front. Do not operate front vibrator until bin is empty in back and the back vibrator has turned off. For more details consult Vibco.

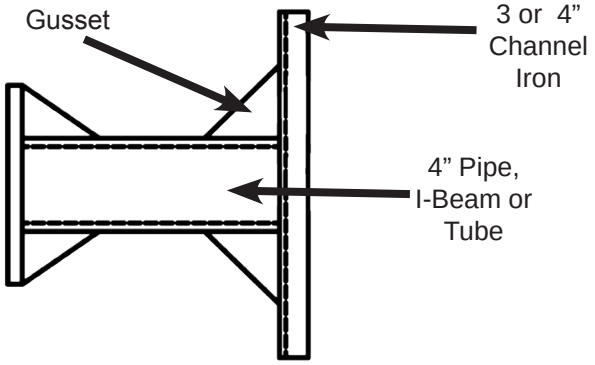
Heat Mounts for Insulated Bins Containing High Temperature Materials

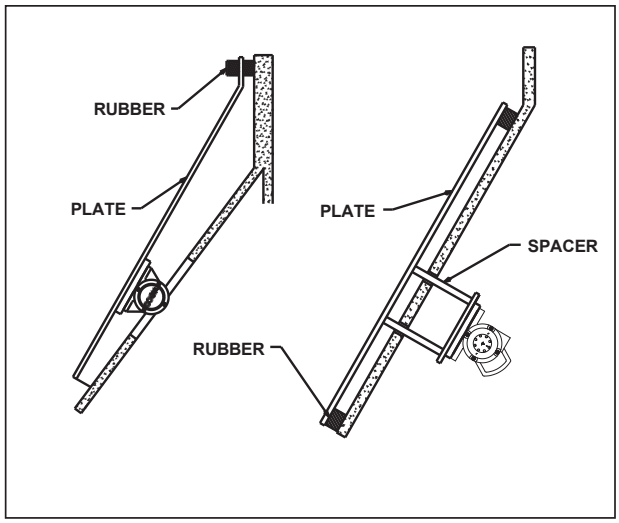
When materials in the bin have a temperature over 150°F, it is advisable to use a "heat" mount to prevent excessive heat from reaching the vibrator causing overload or bearing failure. Also ask for "high" temperature grease in vibrator bearing. Consult VIBCO for vibrator size.



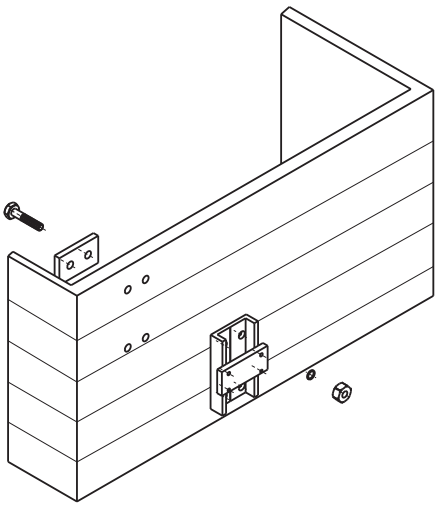








Mount steel plate on inside of bin so that the vibrator sits 1/3 up bin side. Isolate the plate from the concrete by using vibration shock absorbers. Consult VIBCO for detailed drawings.



Use steel plate on inside and bolt to outside mounting channel.

CHUTES

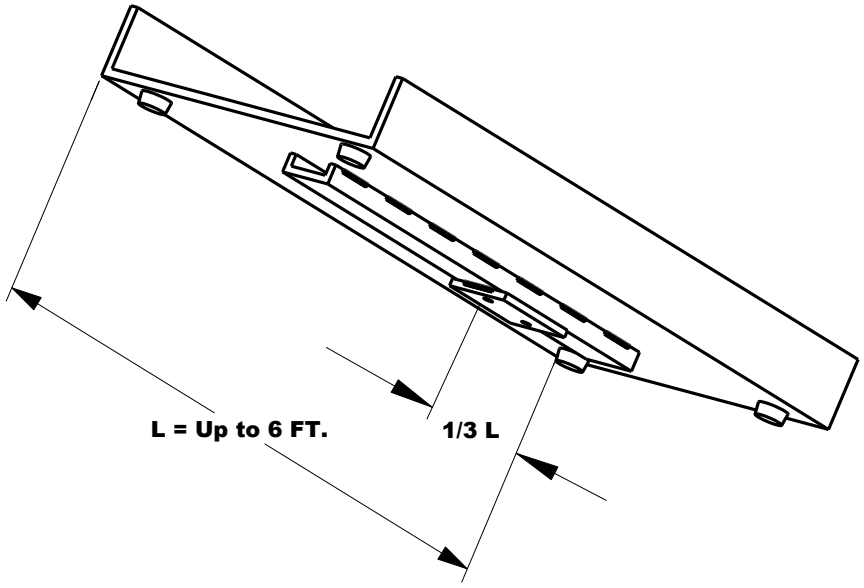
In order to successfully move material in a chute, the “angle of repose” of the material has to be known. It can be found in most handbooks or can easily be measured by pouring a cup of the material on a table. The angle between the table and the cone the material makes is the “angle of repose”. To move the material in the chute, it should be inclined no less than 1/2 of the “angle of repose” If this cannot be obtained, a feeder is necessary to move the material.

(A) Chutes up to 6 ft. are generally handled by one vibrator mounted approximately 1/3 from the discharge.

(B) On chutes over 6 ft. long, two vibrators are needed, one should be placed 18 - 24” from the discharge. The other approximately in the middle. Since chutes are very sensitive to vibration, provision should be made to move the lower vibrator 6 inches in either direction. This could mean the difference between moving the material or not moving it.

(C) The direction of rotation of the vibrator shaft should be in the direction of material flow.

(D) Force (impact) needed on vibrator is equal to weight of chute + vibrator + max material in chute. Chutes must have an inclination of at least 10° for vibrators to be able to move the material. If inclination is less the chute has to be made into a feeder. Contact VIBCO for selecting the proper size vibrator or ask for the bulletin covering chutes.



CUSTOM MOUNTING APPLICATIONS

For custom mounting applications

Call 1-800-633-0032 **E-mail vibrators@vibco.com**

Or

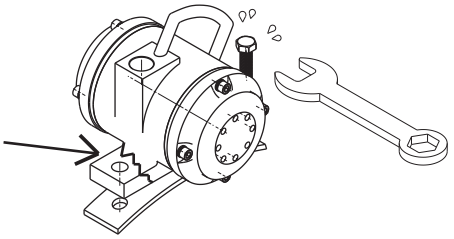
PHONE ORDER: 800-633-0032 **FAX: 401-539-2584**

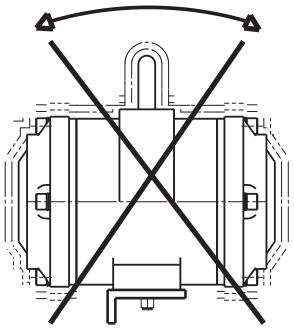
WWW.VIBCO.COM **VIBRATORS@VIBCO.COM**

VIBRATOR INSTALLATION

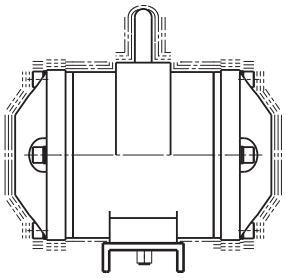
It is now time to put the VIBCO vibrator in place. Make sure that it is secured tightly. Retighten the bolts after the first 10 to 15 minutes of operation and check them periodically to maintain proper tightness.

NOTE: Damage to the bin and the vibrator can occur if not mounted securely. No matter how thick the mounting plate can still warp during welding if you do not follow these instructions.



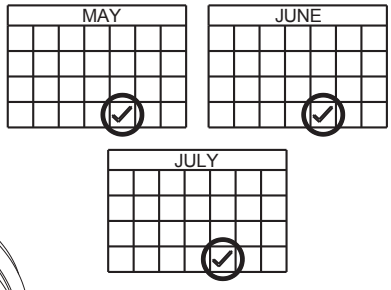


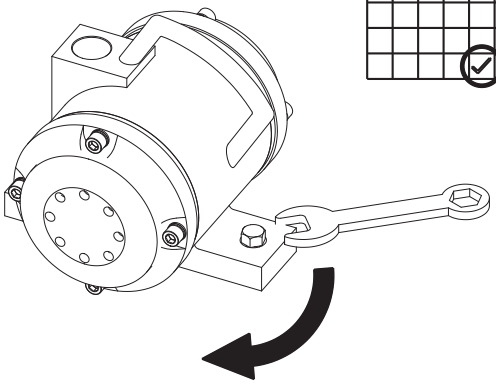
Angle Iron



Channel Iron

Note: Too loose a mount will cause feedback or bounce back amplitude, causing vibrator to burn out. Mount **must** be rigid.





GRADE 5 BOLT SIZE	MAX TORQUE ft-lbs
1/4"	9
5/16"	18
3/8"	32
1/2"	78
5/8"	160
3/4"	260
1"	580
1-1/4"	1105

Air Line To Vibrator

The hose to the inlet port of the vibrator should have the same or larger hose I.D. as the inlet I.D. (pipe size) of the vibrator, so that the pressure loss from the compressor to the vibrator is minimized.

TO DETERMINE CORRECT AIR HOSE SIZE**

CC TURBINE MODEL NUMBER	MIN AIR HOSE DIA	MIN FR* THREAD DIA	CFM
2000/4000	3/4"	3/4"	40
5000/7000	1"	1"	50

* F=filter R=regulator

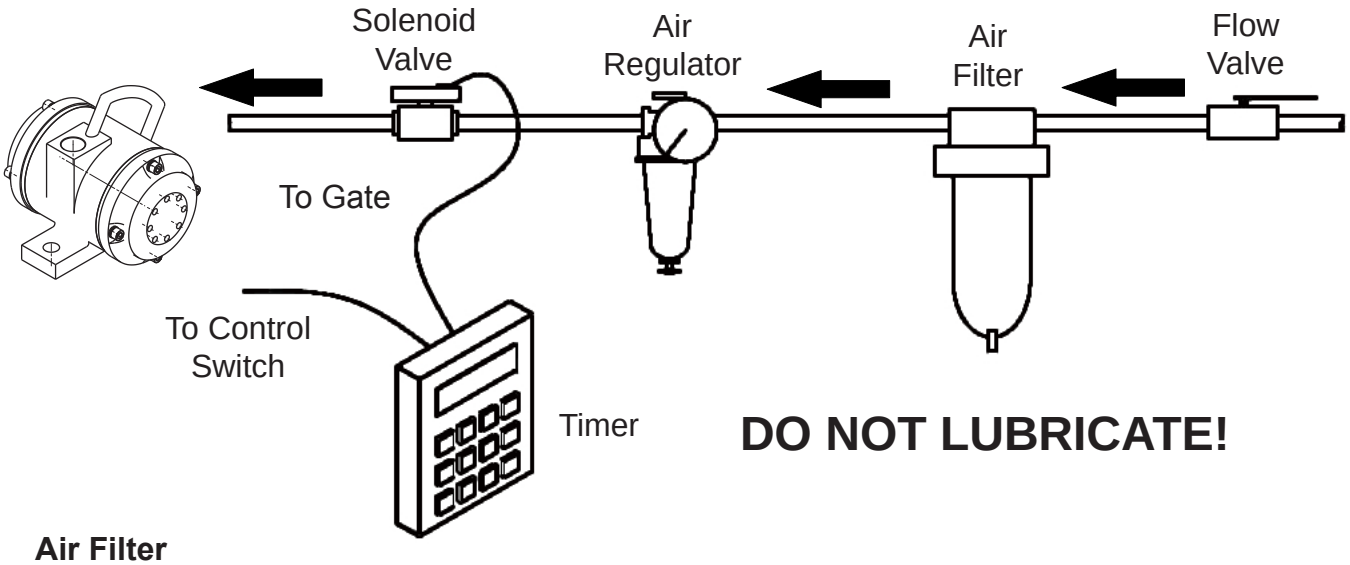
** these specs for installation of single unit;
for multiple units, adjust to maintain CFM

Flow Valve

A simple flow control valve is recommended to allow “tuning” the vibrator to the desired force necessary for solving your material flow problem. The air flow determines the force and frequency of the vibrator. By throttling the air flow, you can “find” the desired material discharge rate. You should watch for and avoid speeds (frequency) at which the bin wall and the vibrator shake violently. An increase or decrease of air flow (assuming the mount is rigid) usually stops the excessive movement and will smooth out the operation.

Quick Opening Valves

These are recommended between the air regulator and the vibrator so that the air enters the vibrator at full starting force even at low regulator valve settings. The only requirement is that you install the air regulator at least 12 inches away from the quick opening valve so that the air pressure between the two valves will build up enough to yield the necessary starting force. Solenoid (quick opening) valves are suggested for automatic operations. Automatic Timed Cycling is programmed with the timer usually directly connected to the bin or hopper gate switch. When the gate is opened the timed cycling system is activated.



Air Filter

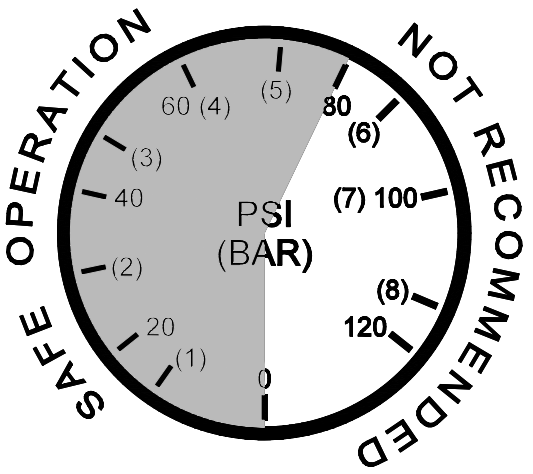
It is recommended that you use an air filter in the line. Clean air will prolong the life of any pneumatic vibrator. Dirty or moist air will harm the unit and impair it from operating at maximum efficiency and lowest air consumption.

MAXIMUM AIR PRESSURE

The **CONTINUOUS DUTY** operating pressure of the CC Series Turbine vibrator should not exceed 80 psi.

Safe Operation for Continuous Duty

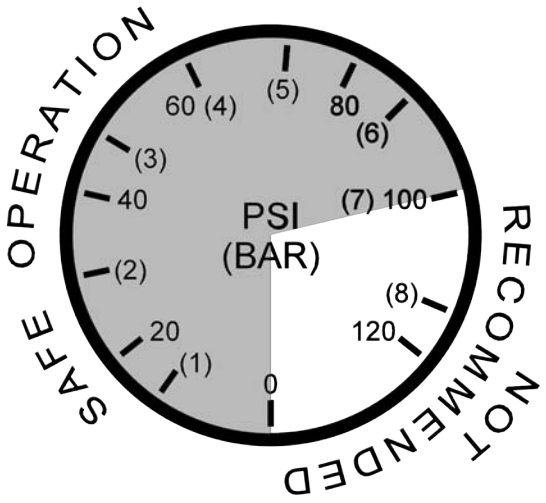
Not Recommended



The **INTERMITTENT DUTY** operating pressure of the CC Series Turbine vibrator should not exceed 100 psi.

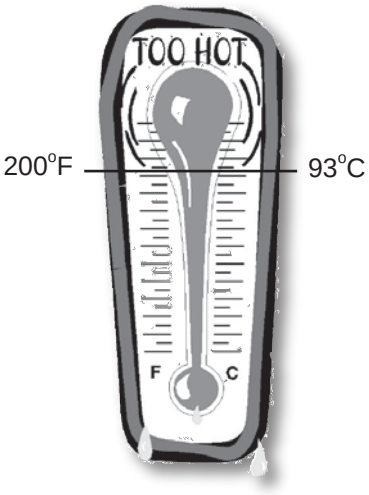
Safe Operation for Intermittent Duty

Not Recommended



Maximum Temperature

The operating temperature of the vibrator should not exceed 200°F (93°C). High temperature units are available (Figure 4).



OPERATING INSTRUCTIONS

To Obtain Maximum Performance

It is not necessary to operate the vibrator at its maximum capacity to obtain maximum performance. Air regulators, timers, etc. should be used to tune the vibrator for optimum performance and ensure longer life.

Continuous vs. Intermittent Operation

For bulk material bin applications, the vibrator should be used to reduce the material friction and increase flow, not as a feeder. Once the friction of the particles is reduced, gravity flow takes over and the vibrator should then be turned off for several reasons:

Economy. Most vibrators are run 60% to 80% longer than they should. Short bursts of vibration are usually more effective than operating continuously. Experience has shown that for most applications, short bursts of 10 to 30 seconds for every 1 to 5 minutes of discharge are more effective and efficient.

Life of the Unit. The life of the vibrator will be determined by the length of operation and the cleanliness of the air supply.

Guaranteed Success of the Application. The vibrator can only furnish material to the discharge area. If more is furnished than conveyed, the remaining material will pack inside the bin. We suggest the vibrators only run when the bin gates or doors are open, or when material flow is needed.

MAINTENANCE

VIBCO turbine vibrators function without maintenance. They require no lubrication in the air line. It is advisable to put an air-cleaner in the line to prevent dust and dirt from going through the unit and clogging the muffler. All models are easily repairable. Remove both nuts, press the shaft out of the bearings and turbine. Use Andok C or Unirex N2 (by Exxon) or equal type of grease. When reassembling be sure the turbine wheel is put back so that the incoming air will hit the pocket of the tooth, not the back of the tooth.

TROUBLESHOOTING

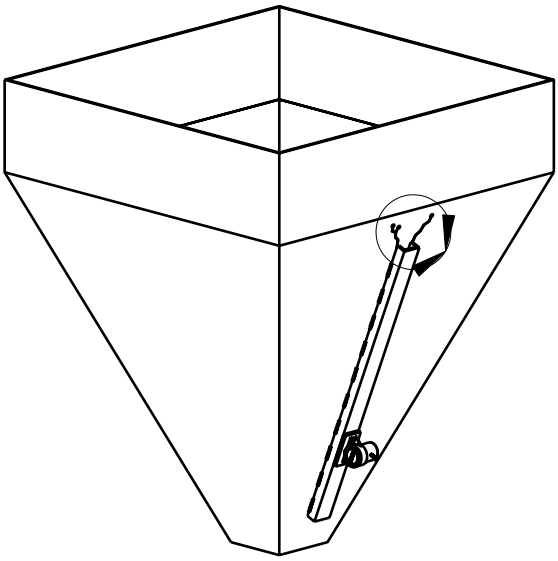
If required, all models are easily repairable. The ball bearings can easily be changed by any maintenance mechanic by removing the two end covers and pressing out the damaged bearings from the turbine wheel. Remove both nuts, press the shaft out of the bearings and turbine. Note: Use Andok C or Unirex N2 (by Exxon) or equal type of grease. When reassembling be sure the turbine wheel is put back so that the incoming air will hit the pocket of the tooth, not the back of the tooth.

When new, the turbine vibrator might be slow in starting due to:

- **A.** The bearings being packed with grease. Excess grease will be thrown out of the bearing after a short operating time.
- **B.** Temperature might be low causing the grease to be stiff. After a short operating time the grease will warm and begin to loosen.
- **C.** Bearing seals are stiff when new or cold. A brief run time will wear them in.

Sudden loss of vibration:

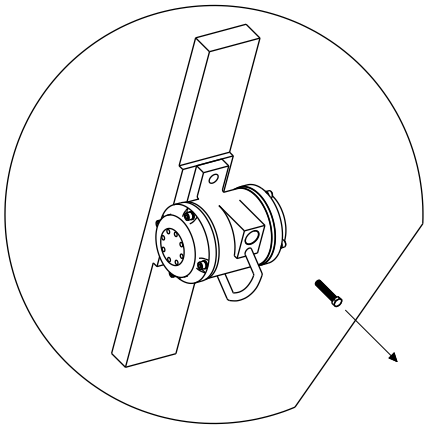
- **A.** Loss of vibration could be caused by a cracked weld or a crack in the bin. Vibration will not travel through a crack. Follow the instructions below on how to fix the problem.



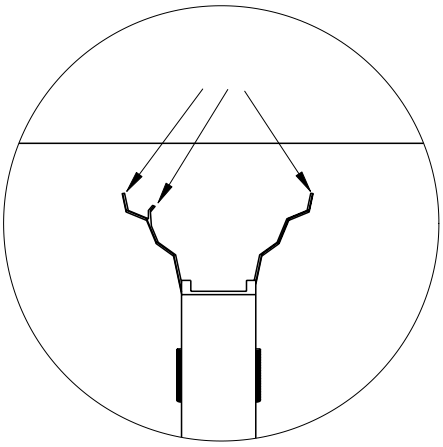
Cracked Bin Shell

Cracked bins are usually due to improper welding, or improper mounting of the vibrator to the bin. If you notice that cracks have developed on your bin, follow the procedure detailed below to repair the cracks and eliminate any further cracking.

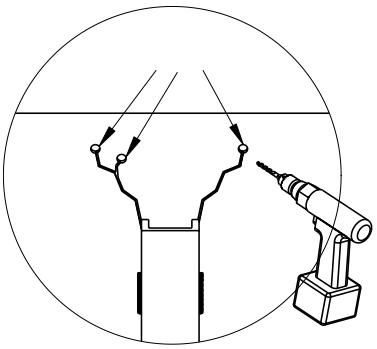
REPAIRING BIN CRACKS



1) Remove the vibrator from the mounting plate, removing one bolt at a time



2) Locate where cracks stop. Take note of any places where the cracks may have branched off. It is very important that you located all the branches of the crack.



3) Drill holes at the end of every crack (on every branch). For average size cracks use a 1/4” drill. For larger cracks, use your best judgement to determine the appropriate drill size. What is important is that the drill size is larger than the width of the crack.

The improper welding of bin stiffeners, to which the vibrator is attached, often results in fatigue cracks in the bin. This can be prevented by properly welding stiffeners to the bin side. A stiffener should be skip welded to the bin leaving 3 to 4 inches between welds. STOP WELDS 1 IN. FROM THE ENDS OF THE STIFFENER. This will prevent fatigue cracks that occur due to crystallization of the material. This crystallization is caused by the heat concentration that develops when the ends of the channel iron are welded. To stop the cracks, drill a hole at the end of each crack and weld on a piece of angle iron as shown above. When welding on the angle iron STOP WELDS 1 IN. FROM THE ENDS.

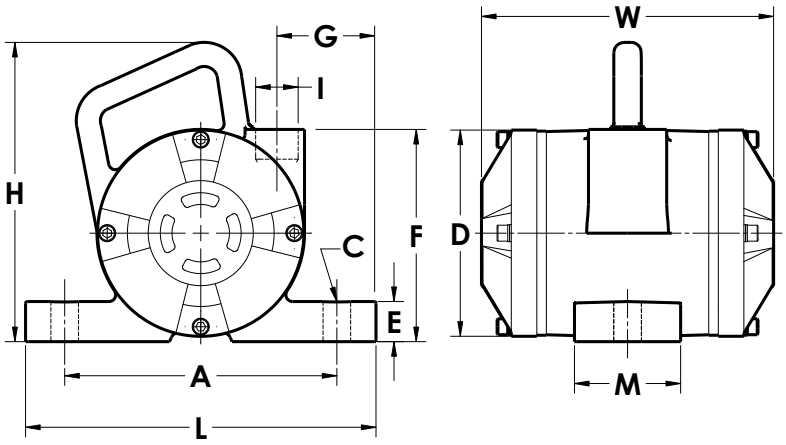
MODEL CC TECHNICAL DATA

Model	Weight		60 PSI (4 Bar)		80 PSI (5 Bar)		Force		dB*	Max lbs.
	lbs.	kg	Speed VPM	CFM	Speed VPM	CFM	lbs.	N		Material in Bin**
CCF & CCL-2000	23	10.5	4000	30	6000	40	2000	8998	78	20000
CCF & CCL-4000	23	10.5	4000	30	6000	40	4000	17996	78	40000
CCF & CCL-5000	48	21.8	4000	35	6000	50	5000	22245	75	50000
CCF & CCL-7000	48	21.8	5000	40	7200	50	7000	31143	78	70000

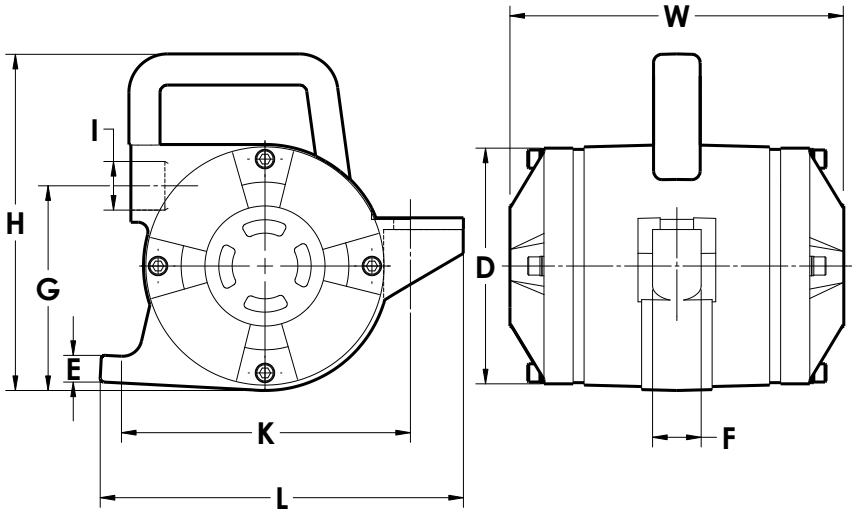
Data obtained on laboratory test block. Frequency and force will decrease on less rigid mount. Data subject to design changes.

* Decible from A-scale at 1 meter and 80 PSI. ** Rule of thumb for sizing "One lb. vibratory force for each 10 lbs. Of bin content at 80 PSI."

CCF



CCL



MODEL CC DIMENSIONAL DATA

Model	A		C**		L		W		H		D	
	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
CCF-2000 & 4000	6	152	5/8	16	7-1/2	191	8-1/16	205	7-1/8	181	5-1/16	129
CCL-2000 & 4000	-	-	-	-	7	178	8-1/16	205	7-1/4	184	5-1/16	129
CCF-5000 & 7000	8	203	3/4	19	10-1/4	260	8-5/8	219	8-7/8	225	6-1/16	154
CCL-5000 & 7000	-	-	-	-	9-3/8	238	8-5/8	219	8-5/8	219	6-1/16	154

Model	E		F		G		I*		K		M	
	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
CCF-2000 & 4000	3/4	19	5-3/8	137	1-3/4	44	3/4-NPT		-	-	2	51
CCL-2000 & 4000	3/8	10	3/4	19	4-1/8	105	3/4-NPT		6	152	-	-
CCF-5000 & 7000	1-1/8	29	6-1/4	159	2-7/8	73	1-NPT		-	-	3-1/8	79
CCL-5000 & 7000	13/16	21	1-1/4	32	5-1/4	133	1-NPT		8	203	-	-

* NPT Pipe tap size ** Bolt size

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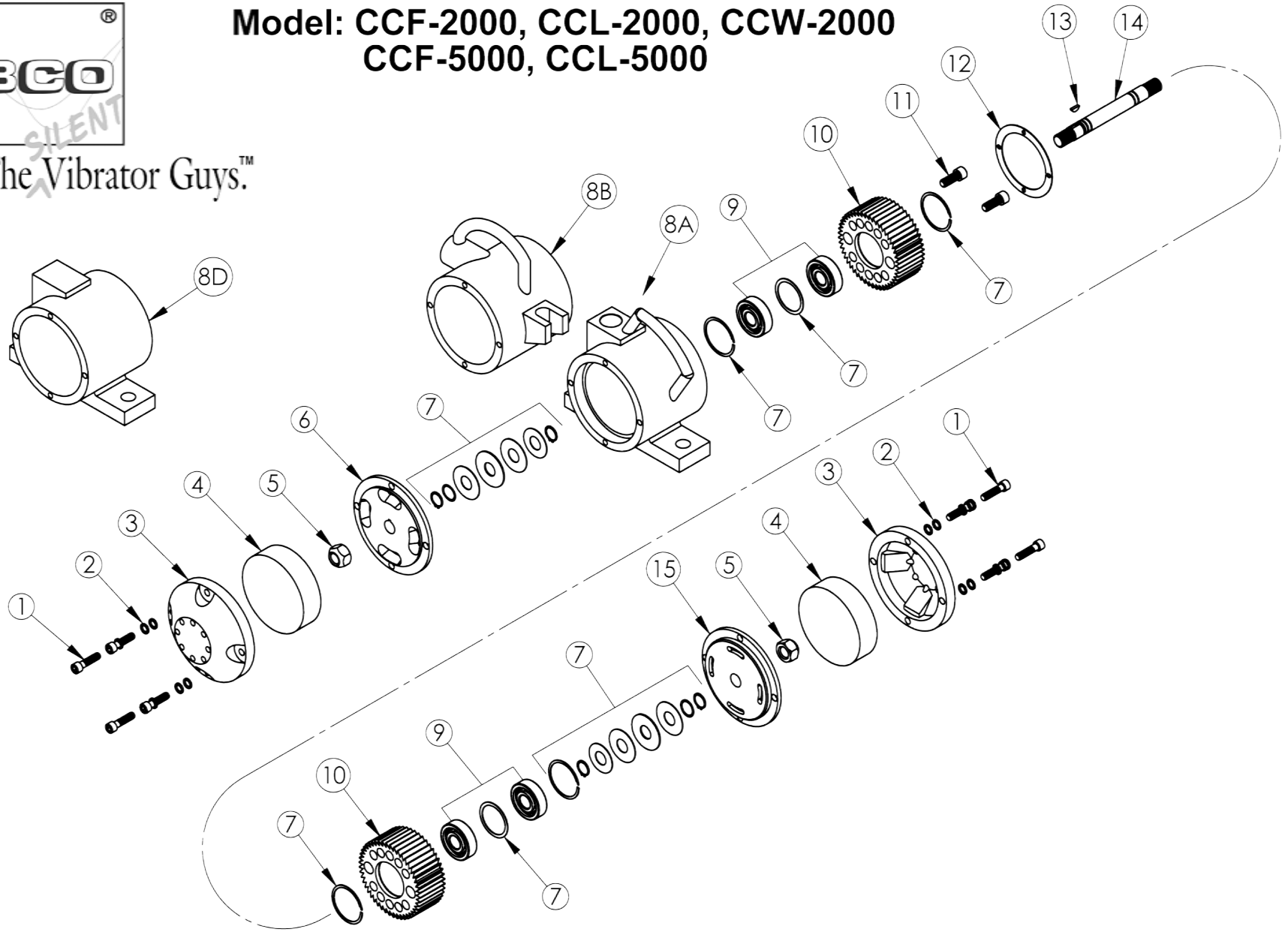
Model: CCF-2000, CCL-2000, CCW-2000
CCF-5000, CCL-5000



Model: CCF-2000, CCL-2000
CCF-5000, CCF-5000T, CCL-5000

Item	CCF, CCL, CCW-2000 Part Numbers	CCF, CCL-5000 Part Numbers	Description	Number Required
1	5/16-24X1-1/4SH	5/16-24X1-1/4SH	Screw, Socket Head Cap	8
2	5/16DL	5/16DL	Disc Lock	16
3	20CC10-1	50CC19	Exhaust Cover	2
4	20CC01-1	20CC01-1	Muffler Pad	2
5	5/8-11SN	3/4-10SN	Stover Nut	2
6	20CC25	70CC16	Inside Cover With Keyway	1
7	WASH-55	WASH-56	Washer Kit *	2
8A	20CC07	50CC20	Foot Housing - CCF	1
8B	20CC12	50CC24	Lug Housing - CCL	1
8C	-	50CC40	Foot Housing No Handle	1
9	6303LLB-C3	6305LLB-C3	Bearing	4
10	20CC11	50CC26	Sawtooth Gear	2
11	3/8-16X1SH	3/8-16X1SH	Screw, Socket Head Cap	2
12	33VM23	56VM38-2	Gasket	1
13	404	61	Woodruff Key	1
14	20CC26	50CC37	Shaft With Key Cut	1
15	20CC09-1	50CC16-1	Inside Cover	1
	RK-2000	RK-5000	Repair Kit **	

* Washer Kits include: Retaining rings, Wave washers, Felt washers, Bearing spacers, Nylon shields and Snap rings.

** Repair Kits include: Washer Kit, Bearings, Turbine wheels, Shaft, Gasket, Cover with keyway and woodruff key.

PHONE ORDER: 800-633-0032 FAX: 401-539-2584
WWW.VIBCO.COM VIBRATORS@VIBCO.COM

Model: CCF - 4000, CCL - 4000, CCW - 4000

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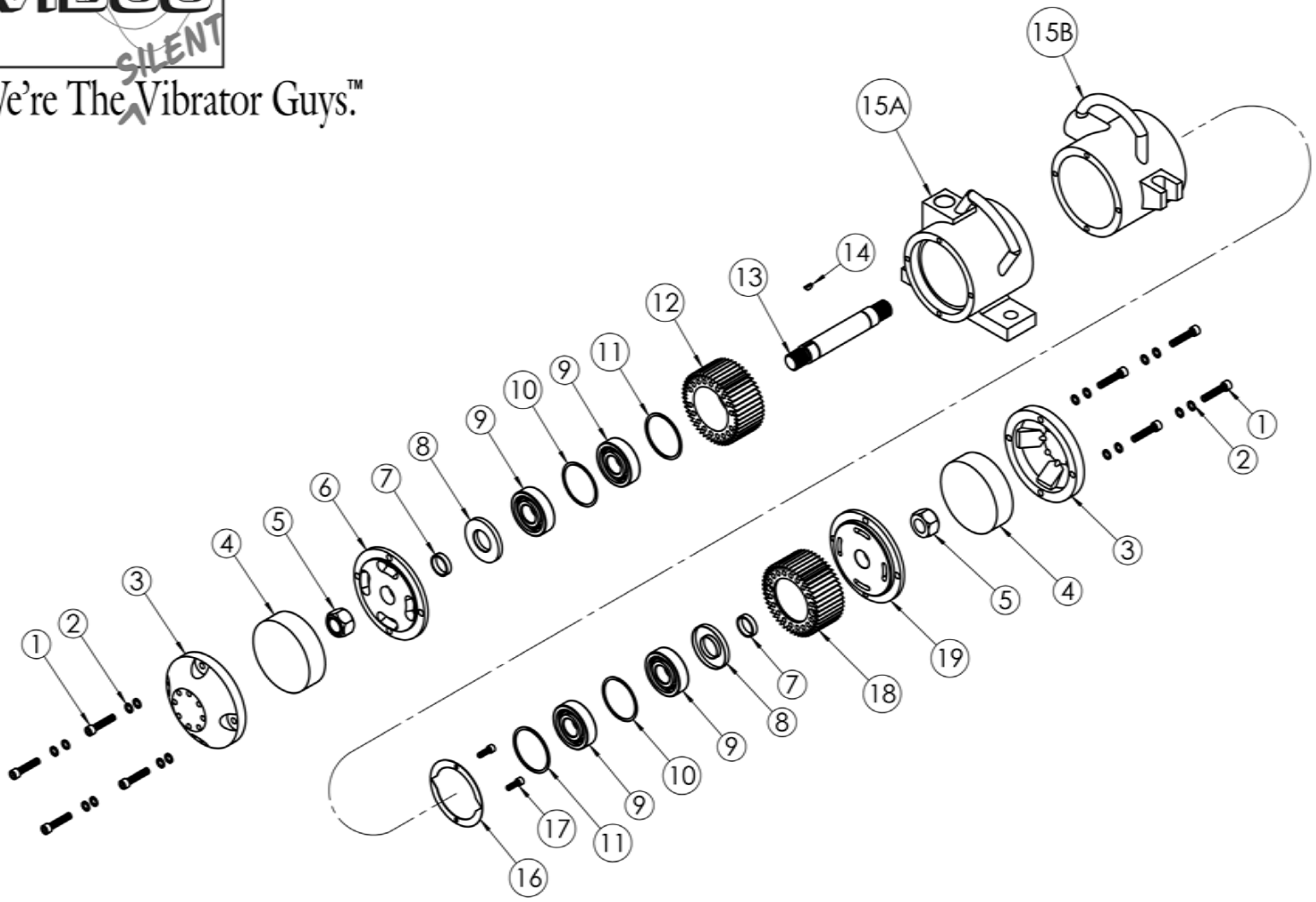

Model: CCF-4000, CCL-4000

Item	Part Numbers	Description	Number Required
1	5/16-24X1-1/2SH	Screw, Socket Head Cap	8
2	5/16DL	Washer, Disc Lock	16
3	20CC10-1	Exhaust Cover	2
4	20CC01-1	Muffler Pad	2
5	7/8-9SN	Stover Nut	2
6	20CC29-2	Inside Cover With Keyway	1
7	20CC30	Seal RIng	2
8	20CC24	CR Seal	2
9	6305LLB-C3	Bearing	4
10	1/32X2-7/16	Bearing Spacer	2
11	RR244	Snap Ring	2
12	20CC16	Turbine Wheel Left	1
13	20CC27	Shaft	1
14	404	Woodruff Key	1
15A	20CC07	Housing, Foot - CCF	1
15B	20CC12	Housing, Lug - CCL	1
16	33VM23	Gasket	1
17	1/4-20X3/4SH	Screw, Socket Head Cap	2
18	20CC18	Turbine Wheel Right	1
19	20CC29-1	Inside Cover	1
	RK-4000	Repair Kit *	

* Repair Kits Includes: Stover nut, Inside cover with keyway,
Seal ring, CR seal, Bearings,
Turbine wheels, Woodruff key and Shaft.

WARRANTY AND GENERAL INFORMATION

Warranty
All warranty claims must be submitted to VIBCO for approval prior to any repairs being done. Failure to do so will void any and all warranty coverage.

Errors, Shortages and Complaints
Complaints concerning goods received or errors should be made at once. Claims must be made within five days after receipt of goods. Clerical errors are subject to correction.

Returning Parts
Parts should not be returned to VIBCO without prior authorization. Call VIBCO customer service department at 1-800-633-0032 (1-800-465-9709 in Canada) for a Return Goods Authorization (RGA) number. A return authorization will be faxed to you. Return shipping must be prepaid. Material returned may be subject to a 10% rehandling charge. All returned shipments should clearly display your name and address. In order to assure proper credit our invoice number, against which parts were returned, must be supplied.

Orders for equipment built to specifications which vary from VIBCO's standard units are not subject to cancellation.

Responsibility
VIBCO cannot be responsible for delays due to strikes, accidents, negligence of carriers or other causes beyond our control.

Freight Claims
Should you receive a shipment from VIBCO which was damaged in transit, your claim is to be filed immediately with the carrier. All parts sold by VIBCO are on the basis of F.O.B. Wyoming, Rhode Island.

Product Changes
The right is reserved by VIBCO to make changes in pattern, design or materials when deemed necessary without prior notice or obligation to make corresponding changes in previous models.

Price Changes
Prices are subject to change without notice.

Ordering Spare Parts
Parts can be ordered through authorized distributors or direct from VIBCO. The following data should be provided when ordering:

From foot of housing:	Model of unit.
From spare parts list:	Reference number, part number, description and quantity required.
Shipping instructions:	Specify shipping point and method of shipping.

Corporate HQ & Factory

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